

MATERIAL AND METHODS OF DIFFERENT HEAT THERAPY**Dr. Harish Daga*¹, Dr. Sonal Raval², Dr. Hemant Toshikhane³ and Dr. Nilesh Jethava⁴**¹M.S. (Ayu) Scholar, Shalya Tantra Department, Parul Institute of Ayurveda, Vadodara.²M.S. (Ayu) Scholar, PTSR Department, Parul Institute of Ayurveda, Vadodara.³Principal, Parul Institute of Ayurveda, Parul University, Vadodara.⁴Assistant Professor, Shalya Tantra Department, Parul Institute of Ayurveda, Parul University, Vadodara.Article Received on
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Heat therapy is also called thermo therapy, where heat is used for therapeutic purpose; the technique is practiced majorly for pain relief and rehabilitation. The concept of heat therapy was in practiced since early human civilization with various modifications the same concept is in force even today. The early history of heat therapy, when it was used for a number of reasons can be traced back thousands of year to ancient Greeks, Egyptians, Chinese civilization, and Ayurveda as a valid treatment for various ailments. As the advancement of time there are so many therapeutic processes which can be performed by the use of direct or indirect heat. Sun bath, *Agnikarma*, *Swedana*, *Moxibustion*,

Tau-dam, *kaii/Wasm*, *Fire therapy*, *Akabane*, *Metsa*, *hot needling*, *Fire cupping*, *Banki*, *Hot stone*, *Sauna therapy*, *Cauterization*, *Hot lamp*, *Parafine wax*, *Hot bottles*, *Fluidotherapy*, *Herbal transdermal ionization*, *dip and wrap therapy*, *Sitz bath*, *Diathermy*, *Laser*, *Maser* etc. are the therapies which belongs to heat therapies in different health care systems. Presumably, trial and error discovered some combinations of heat source and physical complaint worked better than others. Such treatments were described as early as some of the Egyptian papyrus writings. Additional study continued into the Renaissance period but largely fell away with the discovery of electricity and the subsequent fascination with its mysteries. In this article all these therapy has been compiled & classified in different manner with their source, method, mode, & penetration of heat. *Agnikarma* therapy is widely practiced in Ayurvedic system was also reviewed in different manner.

KEYWORDS: *Agnikarma, Moxibustion, Tau-dam, kaili/Wasm, Akabane, Metsa, Fire cupping, Banki, Hot stone, Sauna therapy, Cauterization, Hot lamp, Paraffine wax, Hot bottles, Fluidotherapy, Diathermy, Laser, Maser.*

INTRODUCTION

Heat therapy is also called thermo therapy, where heat is used for therapeutic purpose; the technique is practiced majorly for pain relief and rehabilitation. Therapeutic effect of heat include increasing the extensibility of collagen tissues: decreasing joint stiffness reducing pain, relieving muscle spasm: reducing inflammation & edema aids in the post acute phase of healing: and increasing blood circulation. Increase circulation to affected area provides nutrients and oxygen for better healing. Heat is a reassuring and reassurance is analgesic that is applied neurology not just psychological effect.

HISTORICAL GLIMPSE

The concept of heat therapy was in practiced since early human civilization with various modifications the same concept is in force even today. Due to its non-replicable efficacy concept of heat therapy has a huge scope in treating human ailment in coming years also.

The early history of heat therapy, when it was used for a number of reasons can be traced back thousands of year to ancient Greeks, Egyptians, Chinese civilization and Ayurveda also. Exploring the historical background of Ancient Indian treatise like *Vedas, Puranas, Upanisads*, an ample number of information on heat therapy was indicated in different method. Where *Agnikarma* was indicated to produce direct therapeutic burn as well as *Swedana* therapy which is direct or indirect use of heat was indicated to produce higher physiological temperature as relevant to diseases. *Swedana* means fluid perspiration from the body by heat, sunlight and exercise etc. As the advancement of time there are so many therapeutic processes which can be performed by the use of direct or indirect heat. Sun bath, *Agnikarma Swedana, Moxibustion, Tau-dam, kaili/Wasm, Fire therapy, Akabane, Metsa, hot needling, Fire cupping, Banki, Hot stone, Sauna therapy, Cauterization, Hot lamp, Paraffine wax, Hot bottles, Fluidotherapy, Herbal transdermal ionization, dip and wrap therapy, Sitz bath, Diathermy, Laser, Maser* etc are the therapies which belongs to heat therapies in different health care systems. Presumably, trial and error discovered some combinations of heat source and physical complaint worked better than others. Such treatments were described as early as some of the Egyptian papyrus writings. Additional study continued into

the Renaissance period but largely fell away with the discovery of electricity and the subsequent fascination with its mysteries.

CLASSIFICATION OF HEAT THERAPY

Heat therapy in Ayurvedic texts considered as *Agnikarma*, where in the term *Agni* refers to heat & *karma* refers as therapeutic burn procedure for better perception. After reviewing the literature of different heat therapies the following classification can be made in different manner-

1. On the basis of contact of heat

- a. Direct heat therapy
- b. Indirect heat therapy

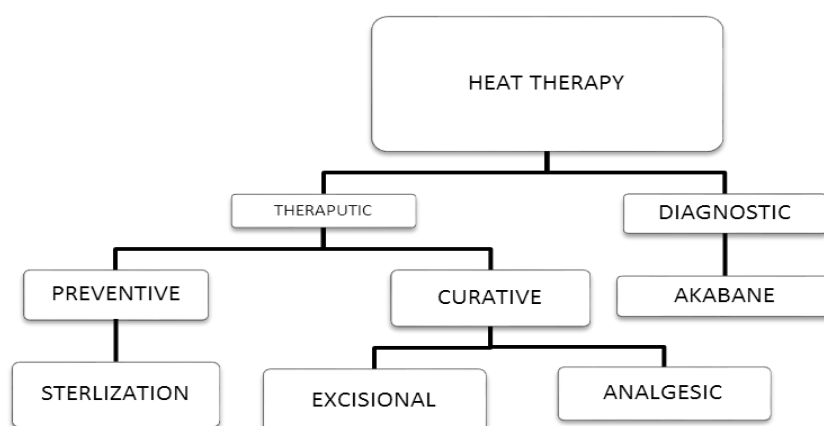
2. On the basis of mode of transfer.

- a. Conduction
- b. Convection
- c. Radiation

3. On the basis of type of heat

- a. Dry heat therapy
- b. Moist heat therapy

4. On the basis of use of heat



5. On The Basis Of Penetration of Heat

- a. Superficial heat therapy
- b. Deep heat therapy

MATERIALS AND METHODS OF HEAT THERAPY

1. **SUN BATH-** It is the almost first method of heat therapy which was practiced in all the health care system as the sun was the only source of energy in early civilization.
 - Source – Sun Rays
 - Method - Direct
 - Mode - Radiation
 - Type – Dry
 - Penetration – superficial
 - Use – Preventive as well as Curative
2. **AGNIKARMA**^{[1], [2]} - *Agnikarma* is one of the important Para surgical process indicated in Ayurveda. Superiority of *Agnikarma* is indicated as once the disease treated with *Agnikarma* never recurs again. In this technique heat is used in direct method in the moist or dry mode.
 - Source – *Metal Rod Pippali, Ajasakrid, Godant, Shar, Oils, etc.*
 - Method – direct
 - Mode – Conduction, Convection, Radiation.
 - Type – dry/moist
 - Penetration – Superficial/deep
 - Use - Excision, pain relief, hemostasis.
3. **MOXIBUSTION**^{[3], [4], [5]} - It is a traditional Chinese medicine therapy using *Moxa* made from dried *Mugwort (Artemisia argi)*.
 - Source – Moxa Stick
 - Method – Direct and Indirect
 - Mode – Conduction and Radiation
 - Type – Dry
 - Penetration- Superficial
 - Use- Improve imbalance of energy of meridians, pain relief, different gynecological disorders.
4. **TAU-DAM-** It is a basically a traditional Himalayan therapy practiced by the rural Himalayan people.
 - Source – Metal Rod/Seed of *Terminalia chebula*

- Method – Direct type
- Mode – Conduction
- Type – Dry
- Penetration – Superficial
- Use – liver troubles, Stomach troubles, Backache etc.

5. **METSA** – It is a type of heat therapy practiced in Tibetan health care system.

Me- means fire.

Tsa- means to produce.

According to *Metsa* heat produced by fire at one particular point helps the energy to circulate and reduces pain. It is not at all based on concept of meridian. *Metsa* is based on the psychophysical formation of natural energy passages. The body is like a bamboo basket full of natural energy passages or connections between the external body and the internal organ.

6. **KAIH/WASM**^{[6], [7], [8]} - It is a traditional method of healing by *cauterization*. It is a form of healing known to the Egyptians or pre-Islamic Arabs centuries ago, is still used in the Sultanate of *Oman* today.

- Source –Pointed or Cresentric metal rod
- Method – Direct
- Mode – Conduction
- Type – Dry
- Penetration – Superficial and Deep
- Use – Arthritis, Neoplasm, Bleeding Etc.

7. **HOT NEEDLING**^[9] – It is another ancient technique which was updated during the Cultural Revolution. It is a good example of how creative thinking of realm of traditional medicine leading to emergence the simple yet effective treatment method with favorable results.

- Source – Hot metal needle
- Method – Direct
- Mode – Conduction
- Type – Dry
- Penetration – Deep

- Use – Trigeminal neuralgia, Neck pain, Back pain, Paralysis Etc.
8. **BANKI** – It is supposed to draw blood to the surface for therapeutic purpose with the help of small glass vessels from which the air is exhausted by heat or suction. Therapy was practiced in soviet period in the history of Russia.
- Source- Glass or plastic vessel
 - Method – Indirect
 - Mode – Conduction
 - Type – Dry
 - Penetration – Superficial
 - Use – Productive cough, Headache, Toothache, Stomachache.
9. **AKABANE**- It is invented by *Akabane* of Japan around the turn of the century in order to determine the imbalance of energy in the channels. It is a *Acumoxa* method for assessing and treating autonomic nervous system imbalance.
- Source – Joss stick on *jingwell* point
 - Method – Direct
 - Mode – Conduction
 - Type – Dry heat
 - Penetration – Superficial
 - Use – To determine the imbalance of energy in the channels.
10. **FIRE CUPPING**^{[10], [11], [12]} - It is Just similar to *Banki* therapy of *Russians*. In this therapy fire heats the inside of cup and small amount of suction is created by the air cooling down again and contracting. In the ‘*moving cupping*^[13], massage oil is applied over muscle group.
- Source – Cup
 - Method – Indirect
 - Mode – Conduction
 - Type – Dry and Moist
 - Penetration – Deep
 - Use – Muscle spasm, Back pain Etc.

11. **SWEDANA** - It is a process by which sweat or perspiration is produced by the body by using different type of methods. This is indicated in Ayurveda.

- Source – Heat sunlight, exercise etc.
- Method – Indirect and direct both
- Mode – Convection radiation
- Type – Dry or moist
- Penetration – Superficial/deep
- Use – Osteoarthritis, Hemiplegia, Sciatica, Sinusitis etc.

12. **PARAFINE WAX**^[14],^[15] - *Paraffin* provide six times the heat that is in water because of the lowered melting point due to the mineral oil in the product. An effective heating modality for distal extremities especially in chronic injuries the *hand, wrist, elbows, ankles, and feet*.

- Source – Paraffin wax, Petroleum jelly
- Method- Indirect
- Mode- Conduction
- Type- Moist
- Penetration- Deep
- Use – Chronic injury

13. **FIRE THERAPY** – Firing is indicated in veterinary science as a traditional treatment for leg injuries. Skin over the flexor tendon, splints, fetlock and knee joint, ring bone is burned from red-hot metal rod.

- Source – Red hot metal
- Method – Direct
- Mode – Conduction
- Type – Dry
- Penetration – Deep
- Use – Arthritis, Tendo-synovitis, Tendinitis, Splints, Bone spavin, Sesamoiditis.

14. **SAUNA THERAPY /TEMAZCAL**^[16],^[17],^[18],^[19]

Sauna therapy is type of heat therapy in which a small room or building is designed for heat session either dry or wet. Sauna can be classified in two type's conventional Saunas which warms the air or infrared saunas which warms the object.

- Source – *Charcoal, Active carbon fibers, Stones etc.*
- Methods - Indirect
- Mode – Radiation
- Type – Dry/Moist
- Penetration – Superficial/Deep
- Use - *Anorexia Nervosa, Arthritis, Fatigue, Fibromyalgia, Obstructive lung disease.*

15. **CAUTERIZATION**^{[20] [21]} - It is a therapeutic process of burning a part of body to remove off or close off a part of it. As a counterirritant, bloodless knife or hemostatic purpose cautery was indicated in almost every possible purpose in middle age.

- Source – Metal rod
- Mode – Conduction
- Type – Dry
- Penetration – Superficial and Deep
- Use – Counter irritant, Hemostasis, Amputation.

16. **DIATHERMY**^{[22] [23] [24]} - It is electrically induced heat or the use of high-frequency electromagnetic currents as a form of physical or occupational therapy and in surgical procedures

- Source - Electromagnetic current
- Method- Direct
- Mode - Conduction
- Type - Dry
- Penetration- Deep
- Use – Muscle relaxation, Cauterization, Neoplasm.

17. **LASER /MASER**,^[25] – laser allows to work at high level of precision by focusing on a small area, damaging less of the surrounding tissues.

- Source – Laser
- Method – Direct
- Mode – Radiation
- Type – Dry
- Penetration – Deep
- Use – Neoplasm, Stone, Alopecia, B.P.H., Back pain.

18. **INFRARED HOT LAMP-** Infrared heating is done by infrared radiation by infrared lamps. Infrared is indicated for vasodilatation and muscle relaxation

- Source – Electric infrared lamp
- Method – Direct
- Mode – Radiation
- Type – Dry
- Penetration – Deep
- Use – Healing, Vasodilatation, Back pain.

19. **FLUIDOTHERAPY**^{[26], [27], [28]} - It is a type of heat therapy in which dry hot air is used for the body warming process including tactile stimulation and powerful massage also.

- Source – Hot air
- Method – Direct
- Mode – Convection
- Type – Dry
- Penetration – Superficial
- Use – Increase local circulation, Skin laxity, Provide warmth which increase range of motion of joint by reducing pain.

DISCUSSION

These are the widely practiced heat therapies some of them indicates that heat therapy is existing since thousands of year and continuing even today also. Heat therapy has given relief to many type of human ailments though this therapy is being practiced internally as well as externally.

The functionality of therapy is either it will increase local tissue temperature and raise tissue activity which also activate immune system of body by releasing endorphins. Direct heat therapy contracts the peripheral vessels which arrest bleeding and also prevent excessive flow of blood to unwanted tissue, so tissue will be starved from blood supply and there will be necrosis and concept may be used in benign and malignant tumor.

Indirect heat therapy by increasing local tissue temperature dilates the peripheral vascular system and increase capillary blood flow which may be helpful in T.A.O and Non healing

ulcer. As heat therapy also stimulate nervous system which is responsible for immediate relief of muscle spasm.

The power of heat therapy was already indicated in *Sushruta Samhita* in the term of Agnikarma in separate chapter as well as Different indications required in whole *Sushruta Samhita* with different intention. Sushruta's concept of Agni tapta Shalaka also indicates the logic of thermodynamics. Energy transferred by Shalaka having two type of mode of heat transfer.

Sushruta's Concept of Conduction- Conduction is a process in which heat is transferred by direct contact between particles of object. Agnikarma in all excision procedure might be considered by conduction type of heat transfer. Sushruta had indicated Agnikarma with the help of different Shalaka in Mamsa gata Roga^[29] which supports the concept of conduction.

Sushruta's Concept of Convection –Convection is a process in which heat is transferred by the heated fluid. Agnikarma by Sneha dravyas in Vata Shamaka propose might be considered under concept of convection like Ghrita, Honey, Oil Etc. These are indicated in *Shira, Snayu, Sandhi and Asthi Gata*^[30] diseases.

Sushruta's Concept of Radiation- Radiation is a process in which heat is transferred by electromagnetic waves. Radiation can be emitted by all the objects which are above absolute zero degree temperature. When we heat Pippali, Ajasakrida, Godanta, Shara, Shalaka they will be red hot. Radiation emitted by red hot objects comes near to infrared radiation. So indication of these objects in *Twakagata*^[31] diseases might be considered under concept of Radiation.

Some indication of *Agnikarma* works on only conduction type of heat transfer or some works on conduction with radiation type of heat transfer. Everything depends on the intelligence of the physician by judging the condition of disease. These are the things when there was no established concept of thermodynamics of modern science. *Acharya Sushruta* has given concept of *Agnikarma* not only in terms of conduction or convection but radiation also.

Probable this is a reason why these all therapies have accepted in different health care systems and by this we can justify as *Sushruta's* quotation the disease which has been treated by *Agnikarma* will never recurred again.

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